viewed carefully the laboratory methods advocated as aids in the diagnosis of the eclamptic group of toxemias. It is very refreshing to me to see that he places his chief reliance upon blood pressure readings, the simpler urinary analyses and the examination of the eye grounds, the latter of which should not at present be considered a laboratory method. Laboratory methods have been developed so tremendously the last few years and the advocates of various procedures have been often so enthusiastic as to their possibilities that one not thoroughly conversant with this field has been quite likely to have been bewildered at their meaning. For this reason, critical papers like Stephenson's have a very distinct value. It is useless to speculate as to what laboratory aids will be developed during the next few years which may prove of value in the early recognition of this group of toxemias of pregnancy. My personal experience in pathology and in the laboratory have made me rather doubtful that much can be expected from methods to determine liver function in this group of disease.

Nearly all who are conversant with the pathology of eclampsia have commented at one time or another upon the fact that the liver lesions, while pathognomonic of eclampsia throw a very small part of the liver out of function. The liver is such a tremendous gland that maintains its vitality in the face of almost insurmountable obstacles that it seems doubtful as to whether early toxemias could greatly disturb the balance of this gland. Occasionally, even when the disease is well marked, one may see at Caesareans a liver surface presenting no petechial hemorrhages or other visible pathology, a fact that I often noted at the time that I thought Caesarean was a justifiable method of treatment of the eclamptic state. Until the etiology of eclampsia becomes known, I agree with Stephenson that the practitioner had better place his reliance upon clinical observations greatly aided by the laboratory aids of blood pressure changes and a careful routine urinalysis and leave the evaluation of newer methods for the moment to the larger clinics where they will be studied with great caution.

". . . **After the doctor had received him in his study** and modestly attended to his long religious preface, with which he introduced his ignominious circumstances, and Dr. Hamey had assured him of his fidelity and gave him hopes of success in his affair, the generous soldier (for such he was) drew out of his pocket a bag of gold and offered it all at a lump to his physician. Dr. Hamey, surprised at so extraordinary a fee, modestly declined the acceptance of it. Upon which the great man, dipping his hand into the bag himself, grasped up as much of his coin as his fist could hold and generously put it into the doctor's coat pocket, and so took his leave. Dr. Hamey returned into his parlour to dinner, which had waited for him all the time, and smiling (whilst his lady was discomposed at his absenting so long), emptied his pocket into her lap. This soon altered the features of her countenance, who telling the money over, found it to be thirty-six broad pieces of gold: at which she being greatly surprised, confessed to the doctor that this was surely the most providential fee he ever received; and declared to him that, during the height of his severe illness, she had paid away (unknown to him) on a state levy towards a public supply, the like sum in number and value of pieces of gold; lest under the lowness of his spirits, it should have proved a matter of vexation, unequal to his strength at that time to bear; which being thus so remarkably reimbursed to him by Providence, it was the properest juncture she could lay hold on to let him into the truth of it."—From "The Gold-Headed Cane."

"**In consultations** there is, of course, much scope for diversity of opinion, but in the whole range of the plausible reasoning which the conjectural science of medicine admits of there is nothing so imposing as a case; it bears down all before it. One of the consulting doctors, after hearing the history of the previous treatment, advances that he has seen a case similar to the one now under consideration, in which he did so and so with manifest advantage; the argument is irresistible."—"The Gold-Headed Cane."

INTESTINAL OBSTRUCTION

A STUDY OF NINETY-THREE PATIENTS OPERATED UPON IN THE SAN FRANCISCO EMERGENCY HOSPITAL SERVICE

By EDMUND BUTLER * AND G. D. DELPRAT *

There always is the possibility that the next patient any doctor sees may have inestinal obstruction. Therefore, it behooves all of us to read this clear and forceful summary of the present methods of managing these patients by those in a position to see them in numbers. Every physician will be the better prepared to meet his responsibilities and possibly avoid later regrets by reading this essay by Butler and Delprat and its valuable discussion by several other surgeons.—Editor.

DISCUSSION *by Alanson Weeks, San Francisco; C. D. Collins, Fresno; A. E. Anderson, Fresno; Stanley Stillman, San Francisco; F. R. Fairchild, Woodland.*

THE early diagnosis of intestinal obstruction is missed not because we are unfamiliar with the condition, but because we fail to take adequate histories and fail to draw the proper deductions from our findings.

It is excusable to make a diagnosis of an acute intra-abdominal crisis and operate immediately, finding a bowel obstruction, but making a diagnosis of enteritis, intestinal influenza, gastritis, vascular crises, or some other condition that will permit of non-intervention, is certainly inexcusable.

Bowel obstruction, due to strangulated hernia, is operated on early universally, but patients with obstructions from less obvious causes are frequently allowed to develop protracted vomiting and an extreme degree of toxemia before intervention is considered.

Our series comprises ninety-three patients with bowel obstructions upon whom operation was performed with a mortality of 34.4 per cent.

There were thirty-four inguinal hernias with obstruction, all were operated on within the first thirty-two hours. Four umbilical hernias and four ventral post-operative hernias were encountered, all strangulated. Nine femoral hernias were operated on; all contained portions of the ileum.

There were seventeen obstructions due to abdominal adhesions. Ten of this group were due to post-operative adhesions; one was caused by adhesions to the tip of Meckel's diverticulum; two were due to adhesions resulting from acute inflammation of the pelvic organs, and two were due to adhesions about the terminal ileum and cecum. In this group, the post-operative diagnosis was at great variance with the pre-operative diagnosis. Five were diagnosed as conditions other than bowel obstructions—one perforated gastric ulcer, two appendicitis, one acute intra-abdominal inflammation, and one strangulated hernia. Three obstructions were due to volvulus, one involved the small bowel, and two involved the sigmoid.

Carcinoma accounted for eleven — two of the

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CHART 1

DIAGNOSIS	Average Poly Count	Duration of Hernia	Average Time Fol. Oper.	Average Duration Acute Sym.	Average Dur. Acute Sym. c Death	Diagnosis Pre-Oper.	Deaths
Hernia Inguinal	11,000	13 + yrs.	.....	32 hrs.	96 hrs.	Int. Obs.	3
Hernia Umbilical	14,500	10 +yrs.	.....	23 hrs.	25 hrs.	Int. Obs.	1
Hernia Vent. Post. Op.	14,000	.....	3.5 yrs.	20 hrs.	25 hrs.	Int. Obs.	1
Hernia Femoral	13,500	14 + yrs.	.....	48 hrs.	80 hrs.	Int. Obs.	3
Adhesions Abd.	14,400	.....	7.3 yrs.	92 hrs.	80 hrs.	Int. Obs. 12 ? 5	7
Hernia Internal	19,000	.....	.....	48 hrs. 120 hrs.	120 hrs.	Int. Obs.	1
Volvulus	28,000	.....	.....	28 hrs. 34 hrs. 96 hrs.	34 hrs. 96 hrs. .	Int. Obs.	2
Carcinoma	13,100	.....	.....	102 hrs.	48 hrs.	Int. Obs. 10 ? 1	8
Undetermined	19,500	.....	.....	63 hrs.	57 hrs.	Int. Obs.	5
Intussusception	16,900	.....	.....	24 hrs.	24 hrs.	Int. Obs.	1
Ilium Syphilis	10,400	.....	.....	12 hrs.	.....	Int. Obs.	....
Peritonitis Prolif.	18,000	.....	.....	24 hrs.	.....	Appendix	....

pylorus, one of the jejunum, three of the cecum, two of the descending colon, two of the sigmoid, and one of the rectum. Six enterostomies alone were performed in this group; one patient recovered. Resection of the cecum, followed by immediate anastomosis, was done on two patients; one recovered. Two patients had resections of the pylorus, followed by anastomosis; one recovered. On one patient gastro-enterostomy for carcinoma of the small bowel was followed by death.

In six obstructions we were unable to determine the cause, because the patients came into the hospital in extremis and enterostomy alone was performed. The one patient that recovered was probably a diverticulitis in the region of the rectum.

A patient with chronic proliferate peritonitis obstructing the terminal ileum recovered following the removal of the thickened peritoneum and the straightening out of the kinked ileum.

Patients with syphilitic ulcers and resulting constricting scars of the ileum producing obstruction, recovered following resection of the involved loop of ileum.

There was only one patient with intussusception, which had existed for approximately twenty-four hours, who died following reduction of an apparently viable intestine.

Charts 1 and 2 give the age, sex, duration of hernias, as well as the time between the development of acute symptoms and operation. In all the patients diagnosed bowel obstruction previous to operation, pain and vomiting were the symptoms that stood out most prominently. Very often the absence of distention was misleading, as a marked dilatation of small bowel was present without any noticeable abdominal distention. Peristalsis was unreliable as a symptom. It is present early, but if toxemia is great, the bowel is paralyzed, and any movement will be sluggish and not heard with the stethoscope. The non-protein nitrogen content of the blood is valuable as a prognostic datum, but is of no value in diagnosis; patients showing 50 mg. per 100 cc. of blood seldom recover.

The exact cause of the toxemia has not as yet been definitely established, but we definitely know that the small bowel contains very toxic material, the absorption of which produces symptoms and signs similar to that of shock, and that the only relief is early release of the obstruction, followed by the proper post-operative treatment.

Treatment as carried out in our service is as follows:

One thousand cc. glucose solution, 10 per cent is given intravenously, very, very slowly if the patient is toxic and dehydrated. Hypodermoclysis, Weeks' drip, and stomach lavage, are employed if for any reason the operation is delayed. The field of operation is dry shaved, scrubbed with ether and alcohol, and painted with a 5 per cent alcoholic solution of picric acid. Ether anesthesia is used where the cause of obstruction is undetermined; for example, internal hernias, volvulus or bands of adhesions. Gas and oxygen or local anesthesia is used where strangulated hernias produce obstruction. Enterostomies were mostly done under local anesthesia. Normal salt solution is given subcutaneously in the axillae or deep into the muscles of the thighs during operation if the operating surgeon deems it necessary. If the cause of the obstruction is not evident, immediately upon opening the peritoneum the hand is introduced, no dilated intestine being allowed to escape, and a systematic search is made for the seat of obstruction. Any band of adhesions, volvulus, thickened bowel, tumors, or fixed bowel, is as a rule immediately palpated, and further steps in the operative procedure may be quickly mapped out. This procedure very often does away with the unneces-

CHART 2

DIAGNOSIS	No.	Male	Female	Right	Left	Average Age	Mortality Per Cent
Hernia Inguinal	34	34	....	22	12	52 +yrs.	8.8
Hernia Umbilical	4	1	3	....	....	55 +yrs.	25.0
Hernia Vent. Post. Op.	4	3	1	....	....	33 +yrs.	25.0
Hernia Femoral	9	2	7	4	5	58 +yrs.	33.3
Adhesions Abdom.	17	6	11	....	....	38.9+yrs.	41.0
Hernia Internal	2	1	1	....	....	54 +yrs.	50.0
Volvulus	3	1	2	....	....	46 +yrs.	66.6
Carcinoma	11	6	5	....	....	59 +yrs.	72.0
Undetermined	6	5	1	....	....	61 +yrs.	83.0
Intussusception	1	....	1	....	....	1.5+yrs.	100.0
Ilium Syphilis	1	....	1	....	....	32 +yrs.	0.0
Peritonitis Prolif.	1	....	1	....	....	18 +yrs.	0.0
	93	59	34	26	17	.....	34+

sary handling of loops of distended bowel in a visual search for the cause of the obstruction.

There are many hints that are familiar to most of us who see many of these cases; for instance, the character of the peritoneum transudate; if clear, denoting moderate interference with circulation, and if bloody denoting strangulation; if bloody with offensive odor, denoting strangulation with beginning gangrene.

Following up collapsed bowel often leads quickly to the source of obstruction. Having located the obstruction and performed the necessary operation for relief, the question of enterostomy comes up. It is our belief that enterostomy in the first loop of jejunum, and immediately above the obstruction if there is any damage to the muscular wall, always should be performed, particularly if there has been any great amount of vomiting.

We have all had the experience of loosening a band of adhesions when the distention has not been great and no gross injury of the bowel is observed, yet the patient slowly dies from an apparent paralytic ileus. This type of case has led us to do enterostomies in practically all obstructions if the toxemia is marked. Technique for the enterostomy is as follows:

The distended bowel is stripped distally and proximally to rid the lumen of gas and foul liquid contents. The return of material is prevented by the assistant holding the bowel between index finger and thumb, or the application of a rubber-protected intestinal clamp applied very loosely (Figs. 3 and 4). Stretch a triangular area of the intestine by means of Allis clamps, surround an area about the size of a nickel with a purse-string suture. Each stitch should include the submucosa. Make a small hole with a knife in the center of the enclosure, just large enough to admit a 16 or 18 rubber catheter, this catheter having several holes made along its wall and with the end cut off squarely. The lateral openings minimize the possibility of blocking. Push the catheter into the lumen well past the lateral openings. Tie the purse-string suture with a surgeon's knot snugly about the catheter; at a distance of about 6 mm. from the first purse-string suture put in another (Fig. 5). Aspirate the gas and liquid contents through the catheter. Drop the gut into the peritoneal cavity, being sure it is not kinked at the point of entrance of the catheter. Lay the omentum around the catheter between the parietal peritoneum and the entrance into the intestine. Bring the catheter out through the upper angle of the wound or through a stab wound, as judgment dictates.

Every two hours the nurse is instructed to flush the catheter with normal salt solution, and oftener if the tube becomes plugged. The catheter is connected with a bottle hanging on the side of the bed, and the quantity of fluid that will be drained from the upper jejunum in the first twenty-four hours is great. If the drainage is continuous, the toxic condition of the patient rapidly improves and there is seldom vomiting. Tissue fluids are supplied intravenously, if necessary, otherwise by subcutaneous and intramuscular therapy.

Weeks' drip three hours on, one hour off, is started immediately upon the patient's return to the ward. In the first fluid that enters the rectum is included 2 drams of tincture digitalis. Hot compresses to the abdomen, we believe, are comforting and promote early peristalsis. We never give pituitrin until peristalsis has been initiated. Morphine sulphate must not be withheld, the patient must be kept comfortable. The enterostomy tube is removed as soon as peristalsis is active and movement of the bowels has taken place.

We have never had any disturbance from the

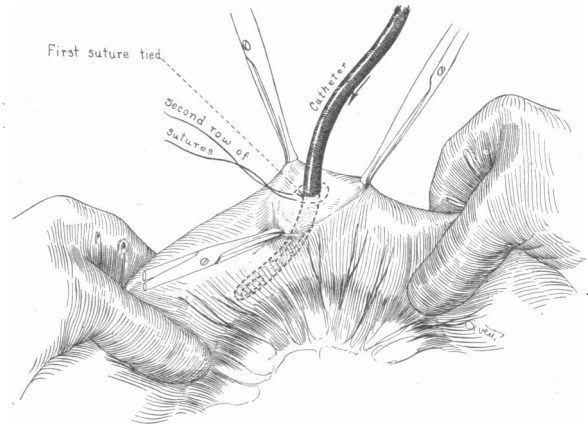

Illustration III. First row sutures tied and second row in place.

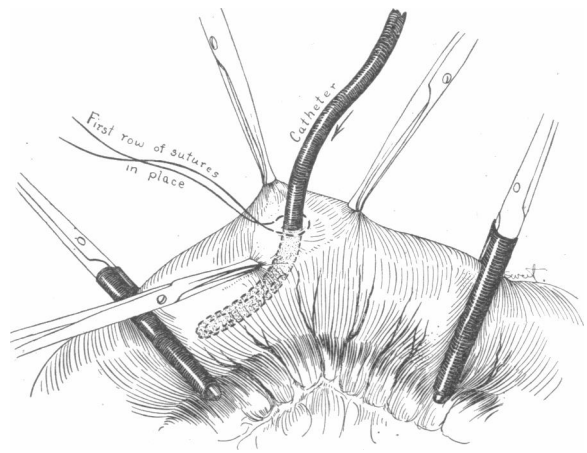

Illustration IV. First row of sutures in place.

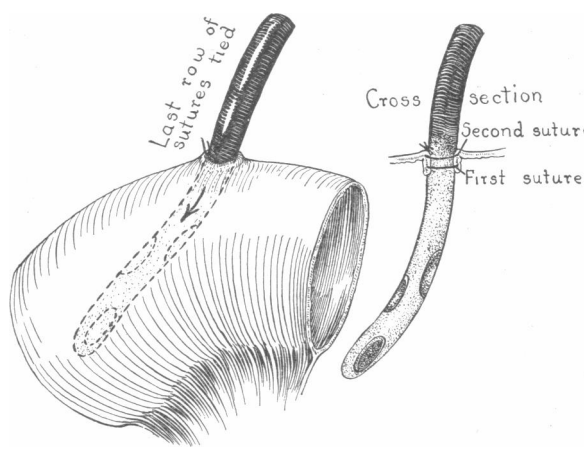

Illustration V. Operation completed.

fistula following the removal of the enterostomy tube.

DISCUSSION

ALANSON WEEKS, M. D. (384 Post Street, San Francisco)—Doctors Butler and Delprat have covered their subject exceedingly well. I would like to have had them even more decided in the differential diagnosis and insistence on early surgery for intestinal obstruction.

Sudden pain out of a clear sky, usually becoming periodic and grinding in character with no increase in temperature or other signs of spreading peritonitis which would cause the usual persistent vomiting of obstruction, calls for quick and certain decisions. It is seldom necessary or of value to bedevil the patient with x-ray examinations or other unnecessary time-killers. Most of us who have seen many of these patients have very few regrets because we opened the abdomen early, the opposite is a sad story.

C. D. COLLINS, M. D. (Mattei Building, Fresno, California)—This splendid paper by Butler and Delprat brings to mind two points that I would emphasize in the consideration of the subject of acute bowel obstruction.

One: We have made considerable progress in the surgical treatment of this condition in the last few years. We have learned that, except in very early cases, removing the source of obstruction is not sufficient to save the life of the patient. It is very essential to remove as much as possible of the toxic material from the occluded bowel and provide external drainage to control further absorption. The method described in the paper is simple and effective.

Two: That in spite of increased knowledge and skill in the surgical treatment of acute obstruction, the present high rate of mortality can not be materially reduced until the physicians have learned the danger of procrastination in dealing with these conditions, and have acquired the courage to insist upon early surgical treatment. The patient in the earlier stages of bowel obstruction usually has the feeling that his bowels are going to move in a short time and it is often a difficult matter to convince him otherwise. It is our job to assume the responsibility and convince him otherwise. We have been able to educate both ourselves and the public to diagnose and treat appendicitis in its curative stage. The same teaching must be applied if we are to be reasonably successful in treating patients suffering from acute bowel obstruction.

A. E. ANDERSON, M. D. (Mattei Building, Fresno, California)—As recently as February, 1924, Sir William Taylor of Dublin, in an editorial in Surgery, Gynecology and Obstetrics, spoke of the toxaemia of intestinal obstruction as an acidosis and advised the administration of sodium bicarbonate. The experiments of McCallum in 1920 and the work of Haden and Orr of the University of Kansas School of Medicine, reported in the Journal A. M. A., May 10, 1924, prove that in this toxaemia there is an invariable tendency toward alkalosis. Hence, there should be no administration of alkalis.

Blood chemistry has shown a marked fall in the plasma chlorids, and the administration of sodium chlorid in large doses is decidedly valuable in the toxaemia of intestinal obstruction as shown by Haden and Orr.

Blood chemistry may also be of some value in the differential diagnosis by showing early the characteristic changes in the blood caused by this toxaemia, viz: high non-protein nitrogen, low plasma chlorids and a rise in the carbondioxid combining power of the plasma.

It is possible that the liberal use of sodium chlorid may prove ample to combat the toxaemia of early cases in which the cause of the obstruction can be readily removed and enable us to dispense with jejunostomy as a routine measure. In advanced cases the enterostomy is, of course, indispensable.

The mortality from intestinal obstruction is variously estimated at from 30 to 50 per cent. By early diagnosis and prompt surgery we could probably reduce this mortality to from 2 to 5 per cent. As for other abdominal surgery, Doctors Butler and Delprat state that cases of bowel obstruction, due to strangulated hernia, are always operated early, but patients with obstruction from less obvious causes are often permitted to develop an extreme degree of toxaemia before intervention is considered. It seems evident that the physician who first sees these patients hesitates to make a diagnosis of intestinal obstruction in the presence of symptoms that must be suggestive of that condition. We must sell the idea to the physician that even at the risk of an occasional unnecessary laparotomy, these patients must be operated upon during the first twenty-four hours or earlier, if we are going to reduce this diseous mortality, which is a constantly recurring reproach to all of us.

STANLEY STILLMAN, M. D. (Stanford Hospital, San Francisco)—Doctors Butler and Delprat have had exceptional opportunities for the observation and treatment of acute obstruction, and acute termination of chronic obstruction of the bowels, and their conclusions and methods of treatment are entitled to consideration and respect, and their results are gratifying. Their method of draining the involved bowel is to be commended for its simplicity and rapidity of performance and avoidance of manipulation of the damaged and distended bowel.

Their discussion of the diagnosis of obstruction, however, is based on acute cases seen in emergency hospital service and their strictures on the general profession, perhaps not quite just—many patients have practically no symptoms, except failure to secure a bowel movement, and it is sometimes almost as difficult to convince one's self as to convince the patient that the abdomen must be opened, till several days have passed and symptoms develop that convince the patient that the time has come to do something, and the physician that the time has passed.

Then too, personally, I have bitter recollections of patients recovering spontaneously after I have convinced myself and all their relatives that they were doomed to certain death if they did not permit their belly to be opened. Nevertheless, I firmly believe and teach that everybody else's patients should be immediately operated upon when there is a well-grounded suspicion that an obstruction exists—and not wait for or expect the classical symptoms of acute obstruction. When these are present the patients quickly find their way to the emergency services and then is the time when Doctors Butler and Delprat's observations begin.

FRED R. FAIRCHILD, M. D. (Woodland Clinic, Woodland, California)—The practical experience in handling ninety-three cases of bowel obstruction as reported by Butler and Delprat affords data of very great practical value.

The insistence on early diagnosis and prompt surgical relief is fundamental. To spend hours in investigation to be sure of a diagnosis, if obstruction does exist, is often fatal.

The point of the paper which the doctors wish specially to emphasize is the necessity of drainage after the obstruction has been relieved. This they accomplish by enterostomy, the technique used by them being altogether satisfactory. In this we concur, but at the Woodland Clinic we have gone a step further. It has been our experience in the past that not always is drainage, as accomplished by the technique suggested, sufficiently rapid or complete if the patient is already extremely toxic. Our procedure is to select a portion in the distended bowel at about midway between the beginning and termination of the distension. A purse-string suture is used exactly as they suggest. The bowel is caught up between the fingers of the assistant in such manner as to prevent leakage. A specially constructed suction tube about fourteen inches long is inserted through a nick in the bowel, negative pressure being in the tube at the time of its insertion. The assistant continuously, by gauze and finger pressure, prevents leakage about the point of perforation and the operator threads loop after loop of the distended bowel over the suction tube as the bowel gradually collapses.

With an experienced assistant it is quite possible to completely collapse the distended bowel, removing all gas and toxic material within the space of five minutes. Through the suction tube, after the bowel has been collapsed, about two ounces of warm castor oil is instilled into the lumen of the bowel. An enterostomy catheter then replaces the tube and the subsequent procedure is

as recommended by the gentlemen whose paper we are discussing.

It is our feeling that the advantage gained by the immediate relief of a large amount of toxic material far outweighs any danger of peritoneal contamination during the procedure, providing the assistant knows the technique of collapsing the bowel.

The Poole's suction tube is not satisfactory for the procedure in that the fenestra are so small that fecal particles obstruct. The tube we use has three large fenestra at the distal extremity, which fenestra are protected by a wire loop placed about one-eighth of an inch away. These fenestra are large enough so that fecal particles are aspirated without obstruction.

PROGRESS OF TREATMENT FOR HYPERTROPHIC STENOSIS OF THE PYLORUS

By BURNS CHAFFEE *

One editorial councilor, himself a good surgeon, writes in his confidential evaluation of this discourse, "It not only is an excellent statement of existing knowledge about the important problem of pyloric stenosis, but it adds to that knowledge, and the author's message is exquisitely delivered."

Another editorial councilor—a pediatrician—writes that "the careful reading of the paper taught me something and I believe the paper, including the discussion, contains an important message for every doctor."—Editor.

DISCUSSION *by Cleon C. Mason, Long Beach; Alanson Weeks, San Francisco; Guy Cochran, Los Angeles; William M. Happ, Los Angeles.*

HYPERTROPHIC STENOSIS of the pylorus was described first by Hezekiah Beardsley (1718) under the title of "Scirrhus of the Pylorus in an Infant." Williamson reported a case, published by Dawosky (1842), entitled, "Observations on the Hypertrophy of the Submucous Tissue of the Pylorus in an Infant Aged Six Weeks." However, little scientific interest was displayed before Hirschsprungs' contributions in 1888, in which he reported two specimens in the new-born. In his descriptions, "The tumors were hard muscle masses with lumens 3 to 5 mm. The approach of the pyloric antrum was funnel shape, the walls more or less hypertrophic." Since then this disease has taken its place as an important one of infancy.

In 1897, Thompson of Edinborough, was able to collect fifteen cases, and the following year Cautley found but twenty cases, including two of his own. In 1902, he states that more than fifty cases had been recorded, in nineteen of which operations had been performed.

Nicoll (1904), said: "These cases when first seen fall in the matter of treatment into two groups, those in which exhaustion and emaciation are so pronounced that immediate operation offers the one chance of saving life, and those in which the stenosis is probably partial, and in which the question of operative interference may be postponed, and the child treated by dieting and rectal feedings; there is, of course, always an element of doubt in the diagnosis in the latter case." Nicoll operated upon the first patient in Scotland (1889), doing a modified Loreta's operation. This case has been referred to frequently as the first successful operation. However, M. Abel preceded him a few months, performing successfully a gastroenterostomy. Writing in 1904, Nicoll states he had seen fourteen cases since his first operation, in nine of which he had operated, losing three. He usually opened the stomach on the anterior wall and divulsed the pylorus, as he states: "To burst up the thickened pyloric ring by forcible over-stretching from within, as one does an obstinate urethral stricture; then decide the further course of operation by the infant's general condition." Because of the high mortality the Loreta divulsion soon lost all the popularity it had accrued and gastroenterostomy assumed the leading role in surgical procedure.

Dent (1902), introduced the Heinicke-Mikulicz operation. It proved inappropriate for true hypertrophic stenosis, and was soon dropped. Later Nicoll devised a partial pyloroplasty in which the mucous membrane was not cut. He observed that the mucosa was normal, that the pathological condition was in the muscle. He made a v-shaped incision perpendicular to the long axis of the pylorus, through the muscle down to the mucosa and converted it into a y, thus enlarging the circumference of the pylorus. In addition, he made an opening in the stomach wall through which he dilated the canal according to the Loreta procedure. This operation required considerable manipulation and never gained much popularity. As the mortality for gastroenterostomy in the hands of the skilled surgeons continued to be discouragingly high, further pyloroplastic operations were attempted.

Fredet and Dufour (1908), also Weber, in December of the same year, incised longitudinally the pylorus through the muscle, down to, but not opening the mucosa, and brought the ends of the incision together. The great contribution to surgery by these three men robbed the surgical intervention for hypertrophic stenosis of its high mortality, by removing the danger of infection and the lessening of manipulation to the stomach and the intestine. Rammstedt (1911), incised the pylorus according to Fredet's method, but was unable to bring the ends of the incision together on account of the sutures cutting through the tissue, and he fastened the omentum over the incised pylorus. In 1912 he operated, incising the muscle, leaving the mucous membrane exposed. Both babies recovered. The simplicity of the operation and the gratifying results have popularized surgical intervention for true hypertrophic stenosis of the pylorus in infants.

Strauss (1912 and 1913), devised experimentally, a pyloroplasty which he has employed with brilliant results. He reports 101 operations with three deaths. He does a minimum disturbing of the abdominal viscera and delivers the pylorus without handling any other portion of the stomach. He lays stress on the importance of the flap of the hypertrophied muscle which he sutures over the exposed mucous membrane. The importance of this muscle flap is questionable, inasmuch as careful studies of pathological specimens have shown that the mucosa needs no protection. However, the operation has emphasized two important steps in the Rammstedt

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